U.S. ARMY CORPS OF ENGINEERS
WALLA WALLA DISTRICT
FISH FACILITIES WEEKLY REPORT
#09-2023

Project: McNary
Biologist: Bobby Johnson and Paul Bertschinger
Dates: April1 28-May 4, 2023

Turbine Operation

Yes	No	Turbine Unit Status		
	X	All 14 turbine units available for service? (See table & comments below for details.)	Hard	Soft
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Table 1. McNary Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit(s)	Date	Time	Date	Time	Outage Description
11 & 12	1/9	0630	7/28	NA	Control system upgrades
9 & 10	5/1	0642	5/4	1654	Transmission line disconnect repair

Comments: RTS dates are subject to change.

Adult Fish Passage Facilities

Measured inspections of the adult fishways occurred on April 28, 30 and May 2. Visual adult fish counting continues.

Fish Ladder Exits:

Yes	No	Location	Criteria	Measurements
X		Oregon Exit	Head over weir 1.0' to 1.3'	1.0' to 1.1'
X		Oregon Count Station Differential	0.0' to 0.5'	0.1' to 0.2'
X		Washington Exit	Head over weir 1.0' to 1.3'	1.1' to 1.2'
X		Washington Count Station Differential	0.0' to 0.5'	0.1' to 0.2'

Comments: Debris loads were light near the Oregon shore exit and minimal near the Washington exit. For the Oregon exit, a new temperature probe has been ordered. Also, several traveling screen alarms came in and were reset on May 2.

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X			North Oregon Entrance Head Differential	1.0' – 2.0'	1.1' to 1.6'
X			NFEW2 Weir Depth	≥ 8.0'	8.4' to 8.6'
X			NFEW3 Weir Depth	≥ 8.0'	8.3' to 8.5'
X			South Oregon Entrance Head Differential	1.0' – 2.0'	1.1' to 1.8'
X			SFEW1 Weir Depth	≥ 8.0'	8.5'
X			SFEW2 Weir Depth	≥ 8.0'	8.5' to 8.6'
X			Oregon Collection Channel Velocities	1.5 to 4.0 fps	Averaged 1.7 fps
X			Washington Entrance Head Differential	1.0' – 2.0'	1.4' to 1.5'
X			WFE2 Weir Depth	≥ 8.0'	8.5' to 8.8'
X			WFE3 Weir Depth	≥ 8.0'	8.4' to 8.7'

Comments: There are no problems to report. At the Washington ladder entrance, the elevation of WFE3 continues to be monitored.

Three floating orifice gates (FOG's) slots, W32, W37 and W 41 remain closed. Nine of 12 slots are open.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Blade angle	Auxiliary Water Supply System (AWS)
Yes				WA shore Wasco County PUD Turbine Unit
	Yes			WA shore Wasco PUD Bypass
Yes*			22° to 24°	Oregon Ladder Fish Pump 1
Yes			21° to 24°	Oregon Ladder Fish Pump 2
Yes*		Yes*	20° to 22°	Oregon Ladder Fish Pump 3/RTS date May 11
Yes				OR North Powerhouse Pool supply from juvenile fishway

*Comments: Fish pump 3 was removed from service on May 1 at 0556 hours. At this time, fish pump 1 was out of service for 20 minutes for a bus switch. Two buses feed the fish pump house but only two pumps can be on one bus at a time. The second bus is out of service for repairs, which in turn removed fish pump 3 from service. Pump 3 is available if one of the two other pumps were to fail. The blade angles on pumps 1 and 2 were increased.

Juvenile Fish Passage Facility

Every other day sample collection continues with no interruption in the schedule this week. Installation of a new forebay (intake) deck crane continues. This will add some challenges to trash rack and VBS cleaning along with ESBS work.

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	Minimal to moderate
X			Gatewell drawdown measured this week?	Daily
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: Debris loads were minimal to moderate near the powerhouse. Wind direction changes moved the residual debris across the forebay from the powerhouse to the Oregon shore and back. Also, some of the debris passed through the spillway. The debris loads beside the spillway and new debris loads were very light to minimal. At week's end, some debris began to come in along the Washington shoreline. Most of the debris was woody material.

The next trash rack cleanings are scheduled for May 30.

Several pieces of woody material were removed from the gatewell slots on April 28 and May 1. There are no problems to report.

Extended-length submersible bar screen (ESBSs)/Vertical barrier screen (VBSs):

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments: ESBS's are deployed in all units except in units 11 and 12, which are out of service. There are no problems to report. Camera inspections will begin on May 9.

Daily VBS differential monitoring continues, and no high differentials were recorded.

Orifices, Collection Channel, Dewatering Structure, and Bypass Pipe:

Yes	No	NA	Item	Number of orifices in service
X			Did orifices operate satisfactory?	42
X			Dewatering and cleaning systems operating satisfactory?	

Comments: There are no problems to report.

Bypass Facility:

Yes	No	NA	Item
X			Sample gates on?
		X	PIT-tag sampling system on?

Comments: The sample gates continue to operate every other day for sample collection. The PIT sample tag system will not be used again this year.

This week, 2030 juvenile lamprey and 35,891 smolts, mostly yearling Chinook and steelhead, were bypassed during secondary bypass. The smolt monitoring staff reports fish data in a separate report.

Five juvenile lamprey mortalities were removed from the dewatering perforated plate upstream of the separator on May 4. Flume barrier installation was review with the fisheries staff.

TSW Operations: Both TSW's are attached to a hoist and are part of the spill pattern.

River Conditions

Table 2. River Conditions at McNary Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
302.1	146.7	244.7	91.2	52.4	49.9	5.0	5.0

Comments: The above data is provided by the smolt monitoring staff except the water clarity, which is provide by the control room. The data day runs from 0700 to 0700 hours. The spring spill season continues.

On January 26th, 2023, Walla Walla District Design Section issued a memo, which allowed McNary to perform two overloaded engineered lifts per spillway crane without violating applicable codes. Late last week, we discovered cranes 6 and 7 had each used their two lifts for the year. Each crane preformed one overloaded lift on April 12 and 18. Design Branch had a meeting to discuss this issue. They do not see any way around the safety standards of EM-385-1-1 16.F.03 (3) d, ASME B30.2 2-3.4 and OSHA 1910.179(n)(1) without violating the guidance. At this point, we cannot perform an overloaded lift until April 2024. We are unable to adjust spillway gates 2 and 6 for flow this season, as prescribed by the Fish Passage Plan, potentially we will be unable to perform critical maintenance and repairs on spillway equipment, and we will be unable to close spillway gates 2 and 6 at the end of this spill season.

Currently, only the hoist from bay 6 is out of service. Ordered parts are scheduled to arrive in early May. The hoist could return to service by early June. At that time, the hoist will be attached to the gate in bay 16 (bay 16 hoist was moved to bay 20 to operate the TSW weir).

When going to reinstall bay 16's dogging mechanism on May 2, it was discovered the anchor points for each mechanism was highly eroded and would require repair before the mechanisms can be reinstalled. In order to repair the anchor points, the two adjacent bays, 15 and 17, will be closed for as part of the safety protocol. Since bay 17 is

an auto bay for the May spill pattern, bay 18 will be switched to automatic mode when bay 17 is closed. The remaining spill volume will be evenly distributed through the remaining open bays during the work. The repair work and reinstall were scheduled for May 3 to 4 and May 8 to 11 during normal work hours. As stated before, after the work is done, bay 16 will remain closed until the hoist is repaired, assembled, reinstalled, and system checks are completed.

Bays 15 and 17 were closed from May 2 at 0745 hours to May 3 at 0836 hours. The bays were supposed to be reopened on May 2 at 1700 hours. However, due miscommunication, the bays were left closed overnight. The bays were again closed on May 4 from 0731 hours to 1646 hours.

So, into the season, bay 2 is set at 4 feet and bay 6 is set at 6 feet along with bay 16 being closed.

Other

Inline Cooling Water Strainers: The cooling water strainer inspections revealed 14 live juvenile lamprey and 85 mortalities on May 2. As in the past, most of the fish came for units that had been in standby for long periods.

Avian Activity: Avian counts continue. The results are recorded in Table 3 below.

For the report week, no terns or grebes were observed on project.

In the spillway zone, a feeding gulls, one roosting cormorant and an occasional pelican were noted. Gull numbers fluctuated. However, Wildlife Services hazing from a boat may have contributed.

At the bypass outfall zone, cormorants and gulls were noted roosting on the juvenile bypass pipe along with a few of the birds feeding. Again, hazing from the boat may have contributed to fluctuating bird numbers.

No birds were observed in the powerhouse zone.

In the forebay zone, occasionally a few flyby gulls or feeding loon was noted. However, outside the zone, a few gulls, cormorants, loons, and osprey were noted along with approximately 25 staging pelicans.

The two large bird distress calls remain deployed and active on the navigation lock wing wall. These calls are very effective at reducing roosting. Until further action could be taken, the laser on the navigation lock wingwall, which appeared to be ineffective, has remained off. The laser on the walkway aimed at the bypass outfall remained activate as it appears to be effective at times. However, while working with the Wildlife Service boat crew, the laser was off from May 1 to 2. As more experimentation is needed, the LRAD was removed from service for programming on May 3.

USDA Wildlife Services continues daily shore hazing. Hazing from a boat occurred on May 1 and 3. Generally, boat trips will occur on Monday, Wednesday, and Friday.

Table 3. McNary Project's Daily Avian Count.

Date	Zone	Gull	Cormorant	Tern	Pelican	Grebe
April 28	Spill	2	0	0	1	0
	Powerhouse	0	0	0	0	0
	Outfall	0	0	0	0	0
	Forebay	0	0	0	0	0
April 29	Spill	14	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	0	9	0	0	0
	Forebay	0	0	0	0	0
April 30	Spill	9	0	0	3	0
	Powerhouse	0	0	0	0	0

	Outfall	5	6	0	0	0
	Forebay	0	0	0	0	0
May 1	Spill	16	1	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	82	10	0	0	0
	Forebay	11	0	0	0	0
May 2	Spill	41	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	33	13	0	0	0
	Forebay	3	0	0	0	0
May 3	Spill	11	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	4	3	0	0	0
	Forebay	0	0	0	0	0
May 4	Spill	35	0	0	0	0
	Powerhouse	0	0	0	0	0
	Outfall	9	0	0	0	0
	Forebay	0	0	0	0	0

Invasive Species: The next mussel station examinations will occur in late May.

Siberian Prawn: No prawns were observed in this week's samples or for the season to date.

Fish Rescue/Salvage**:** No fish rescue occurred this week.

Research: USGS equipment for a juvenile passage study along the upstream edge of the powerhouse and spillway remains in place. For a CRITFC study, there were tissue samples removed from 33 juvenile lamprey collected at the facility this week for a total of 67 fish this season. All fish were returned to the river unharmed. Gas bubble trauma examinations occurred on May 2 and 4. The data is reported the next day. No signs of trauma were observed.

Project: Ice Harbor
Biologist: Ken Fone
Dates: April 28 – May 4, 2023

Turbine Operation

Yes	No	Turbine Unit Status
	x	All 6 turbine units available for service (see table & comments below for details).
x		All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

Ice Harbor Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	Date	Time	Date	Time	Outage Description
3	5/3/19	0641	---	---	Turbine runner replacement and stator rewind
6	5/2/23	1208	5/2/23	1459	Repair turbine bearing cooling line

Comments: None.

Adult Fish Passage Facility

Ice Harbor Fish Facility staff inspected the adult fishways on May 2, 3, and 4.

Fish Ladders:

Yes	No	Location	Criteria	Measurements
x		North Ladder Exit Differential	Head ≤ 0.3’	
x		North Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		North Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
x		South Ladder Exit Differential	Head ≤ 0.3’	
x		South Ladder Picketed Lead Differential	Head ≤ 0.3’	
x		South Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
x			South Shore Entrance (SFE-1) Weir Depth	≥ 8.0’ or on sill	
	x		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.6’, 0.5’
			South Shore Channel Velocity	1.5 – 4.0 fps	Unknown
x			North Powerhouse Entrance (NFE-2) Weir Depth	≥ 8.0’ or on sill	
	x		North Powerhouse Entrance Channel/Tailwater Differential	1.0’ – 2.0’	0.7’, 0.6’
x			North Shore Entrance (NEW-1) Weir Depth	≥ 8.0’ or on sill	
x			North Shore Channel/Tailwater Differential	1.0’ – 2.0’	

Comments: The water velocity meter has been displaying the same reading since April 25. It appears that the velocity readout is not updating on the meter. A work order was created on May 2 for electricians to check if the meter is functioning correctly.

The south shore and north powerhouse channel/tailwater differentials were below criteria on the May 2 and May 3 inspections. The differential readings on the PLC were in criteria. The disparity in the readings may have been due to the difficulty in obtaining accurate tailwater elevation readings because of the turbulence from spill. The operator raised SFE-1 and NFE-2 weirs a bit after the inspection on May 2 to try to increase the differentials

Auxiliary Water Supply (AWS) System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System
6 pumps	2 pumps		Status of the 8 south shore AWS pumps
2 pumps		1 pump	Status of the 3 north shore AWS pumps

Comments: North shore AWS pump #1 has been out of service since March 1 because of a hydraulic cylinder leak on the butterfly valve.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
x			Forebay debris load acceptable? (amount)	Average of 15 square yards
x			Gatewell drawdown measured this week?	
x			Gatewell drawdown acceptable	
x			Any debris seen in gatewells (% coverage)	0-20%
	x		Any oil seen in gatewells?	

Comments: None.

Submersible Traveling Screens (STSs) / Vertical Barrier Screens (VBSs):

Yes	No	NA	Item
x			STSs deployed in all slots that are in service?
x			STSs in continuous-run mode (Note: if not, then STSs are in cycle-run mode)?
	x		STSs inspected this week?
		x	STSs inspection results acceptable?
		x	VBSs differentials checked this week?
		x	VBSs differentials acceptable?

Comments: STSs are in continuous-run mode because of the presence of subyearling chinook fry in the Lower Monumental juvenile fish sample. On May 3, the faulty breaker for the STSs was temporarily replaced with a breaker that was already on hand, and a new permanent breaker is on order.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
x			Orifices operating satisfactory?	20
	x		Dewaterer and cleaning systems operating satisfactory?	

Comments: The actuator for the water regulating weirs in the collection channel is in local control due to a problem with the automatic control function. The weirs are being operated at the actuator to adjust the water level as needed until the problem can be fixed.

When the power to the STS breaker was shut off on May 3 to replace the breaker, power to the orifices was inadvertently shut off, causing the solenoid-controlled orifices in gatewells 2A through 6C to automatically close. As a result, the water depth in the bypass flume dropped to a few inches. The powerhouse operator and fish facility personnel quickly investigated and got power restored and the orifices opened back up.

Juvenile Fish Facility: The juvenile fish facility is operating in primary bypass except when collecting fish for sampling.

Fish Sampling: Juvenile fish sampling is scheduled to occur on Mondays and Thursdays each week. See the tables below for a summary of the sampling results. Seven clipped steelhead and chinook in the May 1 sample and five clipped steelhead and chinook in the May 4 sample exhibited operculum injuries. Most of these injuries were an operculum that was slightly short but did not appear to be torn.

Fish condition sampling results at Ice Harbor Dam:

Date: May 1

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	32	0	0	0
Chinook yearling unclipped	2	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	123	0	0	1
Steelhead unclipped	5	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	162	0	0	1

Date: May 4

Species, Run, Rear type	Sampled	#Descaled	Morts	Avian Marks
Chinook yearling clipped	43	0	0	0
Chinook yearling unclipped	4	0	0	0
Chinook subyearling clipped	0	---	---	---
Chinook subyearling unclipped	0	---	---	---
Steelhead clipped	56	0	1	0
Steelhead unclipped	9	0	0	0
Sockeye clipped	0	---	---	---
Sockeye unclipped	0	---	---	---
Coho clipped	0	---	---	---
Coho unclipped	0	---	---	---
Total	112	0	1	0

Removable Spillway Weir (RSW): Spring spill for fish passage is occurring.

River Conditions

River conditions at Ice Harbor Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
151.7	72.5	109.7	61.7	52	49	5.0	3.9

*Unit 1 scroll case temperature.

Other

Inline Cooling Water Strainers: Unit 1, 2, 4, 5, and 6 cooling water strainers were checked for fish on May 2. A total of 128 juvenile lamprey, 3 adult lamprey, and 157 Siberian prawns (all mortalities) were found.

Avian Activity: There were low to moderate numbers of piscivorous birds seen around the project (see table below). The number of gulls and cormorants counted on April 30 exceeded the threshold number for initiating incident response actions (see Section 7.4 of Appendix L in the Fish Passage Plan). Most of these birds were in the forebay, so the Wildlife Services District Supervisor will make sure the land-based hazers are regularly patrolling that area. The counts for the rest of the reporting period were under the threshold. Land-based hazing of piscivorous birds for 16 hours per day is taking place. Boat-based hazing for 8 hours per day and 5 days per week is occurring, and has been particularly effective at reducing bird numbers in the tailrace areas of the dam.

Daily maximum piscivorous bird counts at Ice Harbor Dam.

Date	Gulls	Cormorants	Caspian Terns	Grebes	Pelicans
April 28	0	9	0	0	1
April 29	2	3	0	0	3
April 30	15	7	0	0	0
May 1	3	12	0	0	0
May 2	8	8	0	0	2
May 3	3	8	0	0	2
May 4	1	4	0	0	0

Invasive Species: No exotic species that are new to the area have been found.

Siberian Prawn: Siberian prawns collected in the sample at the Juvenile Fish Facility are humanely euthanized by the fish sampling contractor, frozen and properly disposed of in a landfill. Daily and total Siberian prawn counts at Ice Harbor Dam for this reporting period are shown below.

Number of Siberian prawns in the sample at Ice Harbor Dam.

Date	Sample (euthanized)	Collection*
May 1	0	0
May 4	0	0
Totals	0	0

*Collection and sample numbers are the same for the facility when sampling at 100%

Fish Rescue/Salvage: None.

Research: No on-site research is occurring at this time.

Project: Little Goose Dam
Biologist: Deb Snyder, Brooke Gerard, Cole Reeves
Dates: April 28 – May 4, 2023

Turbine Operation

Yes	No	Turbine Unit Status
	X	All 6 turbine units available for service? (See table and comments below for details)

*All available turbine units are operated in accordance with Appendix C of the Fish Passage Plan

Little Goose Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
5	4/14/2017		06/30/2023	ERTS	Spider and upper guide bearing repair.

Comments: Contractual obligations and performance issues realigned the Unit 5 ERTS date into 2023.

Adult Fish Passage Facility

EAS Bio and USACE staff inspected the adult Fishway on April 28, May 1, and May 4.

Fish Ladder:

Yes	No	NA	Location	Criteria	Measurements
X			Fish Ladder Exit Differential	Head ≤ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
	X		Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder Exit Cooling Water Pumps Operating Satisfactorily		

Fishway Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Measurements
X		X	South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	
X		X	South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	
X	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.9- 5/4
X		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 7.0’ or on sill	
X		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 7.0’ or on sill	
X	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.6- 5/4
X			North Shore Entrance (NSE-1) Weir Depth	≥ 6.0’ or on sill	
X			North Shore Entrance (NSE-2) Weir Depth	≥ 6.0’ or on sill	
X	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.8- 4/28 0.7- 5/4
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: The adult fishway was initially returned to service on February 14, dewatered February 16 due to discovery of a second fish viewing window leak, then subsequently watered back up and commissioned for the season on February 23. The AWS pumps returned to service on February 23. The Fish Ladder Exit Cooling Water Pump was pulled, inspected, and readied for modest repairs on February 21, work was completed, and the pump was reinstalled and readied for service on May 6. The Collection Channel Surface Velocity is measured at NPE. Rickley channel velocity measurements were completed and met criteria on April 21. Transponder readings documenting the Fish Ladder Depth over Weirs began displaying data inconsistent with physical staff gauge measurements beginning March 30. The North Shore fish entrance weirs continue to experience discrepancy readings between the Fish System Control (FSC) board and physical weir height measurements and is the reason for failed criteria during

this report period. We are working with SMP contracted personnel to standardize reporting to default to physical staff gauge measurements when an FSC board discrepancies are detected.

Auxiliary Water Supply System:

Operating Satisfactory	Standby	Out of Service	Auxiliary Water Supply System (AWS)
X			AWS Fish Pump 1
X			AWS Fish Pump 2
X			AWS Fish Pump 3

Comments: Fish pumps 1, 2, and 3 were returned to service February 23.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comment
X			Forebay debris load acceptable? (amount)	High 70 ft² - Low 3 ft²
X			Gatewell drawdown measured this week?	
X			Gatewell drawdown acceptable	
	X		Any debris seen in gatewells (% coverage)	
	X		Any oil seen in gatewells?	

Comments: The forebay maintained minimal floating debris inside the trash shear boom with the highest measurement occurring on April 28 at 60 ft². The overall total forebay debris high also occurred April 28 at 70 ft².

ESBS/VBS:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?
	X		VBSs inspected this week?

Comments: Installation of Unit 4-6 ESBS's were completed on March 13 and installation of units 1-3 took place March 14.

Orifices, Collection Channel, Dewatering Structure, and Flume:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	19
X			Dewaterer and cleaning systems operating satisfactory?	

Comments: The juvenile bypass system was initially watered up March 6, was halted to fix pinhole leaks discovered in the 42" primary emergency fish bypass pipe, resumed and was fully commissioned on March 7.

Collection Facility: The juvenile collection facility watered up on March 21. Every other day collection for condition monitoring in conjunction with secondary bypass began March 25 with the first sample being conducted on March 26. Everyday collection began April 23 coinciding with every other day barge transportation. A total of 311,233 fish were collected, 0 were bypassed, and 330,424 were transported via barge. There were 283 sample or facility mortalities. The descaling and mortality rates were 2.6% and 0.09%, respectively. The collection and

transport facility operated within criteria and no adult lamprey were removed from the separator during this report period.

Transport Summary: Collection for fish transportation began April 23 with the first barge departure on April 24. Every other day barging is scheduled thereafter pending situational transition to everyday barging due to any unforeseen increase in fish numbers.

Spillway Weir: Little Goose began operation of the adjustable spillway weir (ASW) on March 1 to facilitate passage of adult steelhead overshoots. Operation occurred three days each week every other day for four hours in the morning. Spring spill operations began as scheduled on April 3. Summer spill operations are scheduled to begin on June 21.

River Conditions

River conditions at Little Goose Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
148.9	68.2	66.1	44.1	53.6	49.8	4.9	2.4

*Ladder temperature.

Other

Inline Cooling Water Strainers: Inline cooling strainer inspections commenced on December 1, 2022. Inspections will continue in accordance with the Fish Passage Plan (FPP) and results will be submitted to the District.

Avian Activity: Daily piscivorous bird counts at Little Goose Dam are scheduled to begin April 1, while USDA-APHIS bird abatement contract services are in place.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
4-28	14:30	0	0	0	0
4-29	8:30	2	0	0	0
4-30	12:10	0	0	0	0
5-1	8:30	0	0	0	0
5-2	14:30	0	0	0	0
5-3	15:30	13	3	0	0
5-4	13:45	0	0	0	0

Invasive Species: No invasive species have been observed on the mussel station.

Siberian Prawn: Juvenile fish collection will begin March 25. Siberian prawns collected in the sample at the Juvenile Fish Facility will be humanely euthanized by Oregon Department of Fish and Wildlife and EAS Bio personnel, frozen and properly disposed of in a landfill

Date	Sample	Collection*
4-28	0	0
4-29	0	0
4-30	0	0
5-1	0	0
5-2	1	50
5-3	0	0
5-4	0	0
Totals	1	50

*Collection and sample numbers are equal when sample rates change to 100%

Gas Bubble Trauma (GBT): Oregon Department of Fish and Wildlife began GBT monitoring services starting on April 4, 2023. GBT monitoring occurred on May 4. Of the 102 fish examined, 2 fish exhibited signs of GBT.

Fish Rescue/Salvage: No fish rescue and salvage operations transpired during this reporting period.

Research: The Nez Perce Tribe (NPT) began adult steelhead kelt collection efforts on March 26 with an anticipated conclusion date of July 1.

Project: Lower Granite
Biologists: Elizabeth Holdren and David Miller
Dates: April 28-May 4, 2023

Turbine Operation

Yes	No	Turbine Unit Status		
X		All 6 turbine units available for service (see table & comments below for details).	**Hard**	**Soft**
X		Available turbines operated within 1% peak efficiency? Constraint in effect.	X	

Lower Granite Unit Outages (OOS) and Return to Service (RTS)

	OOS		RTS		
Unit	**Date**	**Time**	**Date**	**Time**	**Outage Description**
4	05/02	1300	05/02	1430	Adjust Wicket Gate Packing

Comments:

Adult Fish Passage Facility

Lower Granite staff inspected the adult fishway on April 28 & 29 and May 3 & 4.

Fish Ladder:

Yes	No	NA	Location	Criteria	Comments
X			Fish Ladder Exit Differential	Head ≤ 0.5’	
X			Fish Ladder Picketed Lead Differential	Head ≤ 0.3’	
X			Fish Ladder Depth over Weirs	Head over weir 1.0’ to 1.3’	
	X		Fish Ladder Cooling Water Pumps in Service		
		X	Fish Ladder Cooling Water Pumps Operating Satisfactorily		

Comments:

Fish Ladder Entrances and Collection Channel:

Yes	No	Sill	Location	Criteria	Comments
	X		South Shore Entrance (SSE-1) Weir Depth	≥ 8.0’	7.7’, 7.9’
	X		South Shore Entrance (SSE-2) Weir Depth	≥ 8.0’	7.8’
	X		South Shore Channel/Tailwater Differential	1.0’ – 2.0’	0.9’, 0.9’
		X	North Powerhouse Entrance (NPE-1) Weir Depth	≥ 8.0’ or on sill	7.9’
		X	North Powerhouse Entrance (NPE-2) Weir Depth	≥ 8.0’ or on sill	7.9’
	X		North Powerhouse Entrance Channel/Tailwater Differential	1.0’–2.0’	0.6’, 0.8’, 0.5’, 0.3’
	X		North Shore Entrance (NSE-1) Weir Depth	≥ 7.0’ or on sill	6.8’
	X		North Shore Entrance (NSE-2) Weir Depth	≥ 7.0’ or on sill	6.8’
	X		North Shore Channel/Tailwater Differential	1.0’–2.0’	0.5’
X			Collection Channel Surface Velocity	1.5 – 4.0 fps	

Comments: Ladder collection channel operation and configuration will continue to be evaluated this season to resolve ongoing issues. FOGs 1, 4, 7, and 10 are in operation. Although there is no spill and both entrance gates are operating, north shore did not meet channel/tailwater head differential criteria. Efforts of the electrical crew were able to bring the ladder into criteria except for the north shore channel/tailrace differential. Shortly after the ladder

was out of criteria. Spill and current flow conditions during gas cap spill appear to drawdown the north side of the spillway and at both NSEs.

Auxiliary Water Supply System:

Operating Satisfactorily	Standby	Out of Service	Auxiliary Water Supply (AWS)
Yes			AWS Fish Pump 1
Yes			AWS Fish Pump 2
No	Yes		AWS Fish Pump 3

Comments: AWS pump 3 in standby.

Juvenile Fish Passage Facility

Forebay Debris/Gatewell Debris/Oil:

Yes	No	NA	Item	Comments
X			Forebay debris load acceptable? (amount)	163.6 yd^2
X			Trash rack differentials measured this week?	
X			Trash rack differentials acceptable	
	X		Any debris seen in gatewells (% coverage)	
X			Any oil seen in gatewells?	1C small headgate hydraulic leak

Comments:

ESBSs/VBSs:

Yes	No	NA	Item
X			ESBSs deployed in all slots and in service?
	X		ESBSs inspected this week?
		X	ESBSs inspection results acceptable?
X			VBSs differentials checked this week?
X			VBSs differentials acceptable?

Comments:

Orifices, Collection Channel, Dewatering Structure, Bypass Pipe:

Yes	No	NA	Item	Number open and in service
X			Orifices operating satisfactory?	18
X			Dewaterer and cleaning systems operating satisfactory?	

Comments:

Collection Facility: Collection for transport continues. The collection facility operated in secondary bypass from 1130-1300 hours May 2 due to the facility exceeding capacity.

Transport Summary: Barge transport continues with barges departing every-other-day on even numbered days. All three transport facilities exceeded holding capacities May 3. LWG was in bypass from 1130-1300 hours May 3 while raceways were loaded onto a third transport barge. Barge 8106 was at capacity with LWG fish resulting in LMN bypassing fish. Every day barging is recommended for early spring transport to avoid the additional stress on personnel and fish, and the need to bypass fish.

Spillway Weir: Spring spill began April 3. There have been 272 adult steelhead and 42,460 juvenile steelhead, 6 adult and 36,766 juvenile Chinook salmon, and 64 juvenile Coho salmon detected at the RSW since March 1. There have been 34 adult steelhead, 13,816 juvenile steelhead, 14,950 juvenile Chinook salmon, and 25 juvenile Coho salmon detected through the Juvenile Bypass System since it was opened on March 15.

River Conditions

River conditions at Lower Granite Dam.

Daily Average River Flow (kcfs)		Daily Average Spill (kcfs)		Water Temperature* (°F)		Water Clarity (Secchi disk - feet)	
High	Low	High	Low	High	Low	High	Low
154.2	72.9	61.5	48.2	51.5	48.5	4.5	1.9

*Cooling water intake temperature.

Other

Inline Cooling Water Strainers: N/A

Invasive Species: No zebra/quagga muscles were detected on the trap substrate. There were 4 Siberian prawns collected in the sample.

Avian Activity: Biologist daily piscivorous bird counts and bird hazing began April 1.

Date	Time	Gulls	Cormorants	Caspian Terns	Pelicans
April 28	1330	0	0	0	0
April 29	1130	0	0	0	0
April 30	1245	15	0	0	0
May 1	1645	0	0	0	0
May 2	1500	0	0	0	1
May 3	1424	0	0	0	0
May 4	1000	0	0	0	12

Gas Bubble Trauma (GBT) Monitoring: April 27, SMP examined 100 salmonids with no signs of GBT symptoms. There was one hatchery steelhead handling mortality.

Adult Fish Trap Operations: Fish will continue to be sampled Monday through Friday until broodstock collection starts August 18.

Fish Rescue/Salvage: N/A

Research:

National Marine Fisheries Service (NMFS) PIT tagging of Adult Wild Chinook and Adult Steelhead for ISEMP-Related Dispersal Monitoring:

The goal of this project is to PIT tag up to 4000 unclipped adult Chinook and 4000 unclipped adult steelhead collected in the adult trap daily sample for dispersal monitoring.

Sampling of Steelhead, Chinook salmon, and Sockeye salmon by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries for Biological data collection.

Upriver migrating steelhead, spring/summer Chinook salmon, and sockeye salmon are collected from the adult trap beginning March 1 through November 30. The goal is to collect 5-20% of adult steelhead, spring/summer Chinook

salmon, and sockeye salmon ascending the ladder March 1-November 30. Data collection includes fish scales, genetics tissue, sex and length, wild/hatchery composition, and non-adipose clipped hatchery fish assessment. All natural origin adult steelhead and spring/summer Chinook salmon trapped will be PIT tagged to estimate headwater tributary escapement. Sockeye salmon may be PIT tagged in the future to estimate metrics regarding conversion rates. Some steelhead and spring/summer Chinook salmon may be radio-tagged or spaghetti-tagged. This information on adult fish forms the basis for status information used in several forums including BiOp-RPA identified needs.

Sampling and PIT tagging of Walleye by the Idaho Department of Fish and Game (IDFG) and NOAA Fisheries.

Walleye collected in the adult fish trap will be PIT tagged to investigate movement and ascension rate of walleye that successfully exit the fish ladder into the upstream reservoir. PIT tag data collected will be used to gain an understanding of the potential expansion and threat of walleye upstream of LWG to ESA-listed salmonids and guide future management actions of walleye in the Snake River Basin.

PIT Tagging and Genetic Sample Collection from Bull Trout for USFWS:

Bull trout will be collected as part of the normal adult trap daily sample and using the adult SbyC system to recapture previously PIT tagged fish. Untagged bull trout will be PIT tagged, fin clipped for genetic analysis, and have morphometric data collected including weight and length etc. Fin clips will be sent to USFWS to determine the fish's origin. Previously PIT tagged bull trout will only have morphometric data collected. All fish will be released back into the adult fish ladder.

Nez Perce Tribe (NPT)/U. of Idaho (UI)/Columbia River Intertribal Fisheries Commission (CRITFC) – Kelt Study

This research investigates steelhead kelt physiology and endocrinology to evaluate the feasibility and success of rehabilitating strategies. The goal is to collect 450-700 kelts from LWG juvenile fish facility separator. Selected kelts are transported by NPT to Dworshak National Fish Hatchery for reconditioning and later release as part of this study. LWG Corps biological technicians collected 137 kelts from the juvenile fish separator with 89 sampled and release, 23 were handled and release, and 25 being transported to the hatchery this season.

PNNL Juvenile Pacific Lamprey Passage Behavior and Survival at Lower Granite:

The goal of the study is to address questions regarding potential effects of dam operations and configurations on juvenile Pacific lamprey behavior and survival using The Juvenile Salmon Acoustic Telemetry System (JSATS). A target of 450 juvenile and 450 larval lamprey will be collected, implanted with a juvenile Eel/Lamprey Acoustic Transmitter (ELAT), and released upstream of LWG. An additional 1000 juvenile or larval lamprey will be implanted with PIT tags. Distribution and approach routes (including vertical, horizontal, and temporal), primary routes of passage (proportions) at LWG, project survival from forebay to tailrace, and reach survival and reservoir residence time will be evaluated using the telemetry system. In addition, 50 dead tagged juvenile lamprey will be released from LGR and 50 from LMN to estimate dam passage survival using the virtual release/dead-fish correction (ViRDCt) model. Detection of tagged individuals will be summarized to evaluate passage routing and estimate dam passage survival at LGR and LMN, estimate reach survival downstream of LGR and downstream of LMN, and evaluate travel time between detection arrays. LWG has collected 84 larval and 168 juvenile lamprey for PNNL this season.

Columbia River Inter-Tribal Fisheries Commission (CRITFC) Pacific Lamprey Genetic Study:

CRITFC has requested that the SMP collect non-lethal tissue samples from up to 2000 juvenile and 1000 larval Pacific lamprey, not to exceed 10 juvenile or larvae daily, during the routine smolt monitor condition sampling from March through September. The purpose of this study is to fill two objectives; 1) Determine relative proportion of translocation offspring among the total abundance of larval and juvenile lamprey passing the juvenile bypass systems at BON, JDA, MCN, and LWG. 2) Describe life history characteristics of larval and juvenile lamprey emigrating from the Columbia and Snake River basins. The genetic information collected will be used to evaluate the tribal Pacific lamprey programs efficacy and assist with guiding future management. LWG SMP collected genetic samples from 216 juvenile and 199 larval lamprey this season.